

In the Specification:

On page 1, after the title insert the following:

RELATED APPLICATIONS

This is a U.S. national stage of application No. PCT/DE2003/003147, filed on 22 September 2003.

This patent application claims the priority of German patent application no. 102 44 200.2 filed 23 September 2002, the disclosure content of which is hereby incorporated by reference.

FIELD OF THE INVENTION

On page 1, amend the paragraph beginning on line 5 as follows:

The invention relates to a radiation-emitting semiconductor component and in particular, to such a component with an improved mirror layer to increase the efficiency and performance of the component ~~in accordance with the preamble of patent claim 1.~~

On page 1, delete the paragraphs beginning on line 9 through 14 and line 16 through 19 in their entirety.

On page 1, before line 21, insert the following heading:

BACKGROUND OF THE INVENTION

On page 3, before line 17, insert the following heading:

SUMMARY OF THE INVENTION

On page 3, amend the paragraph beginning on line 17 as follows:

The One object of the present invention is ~~based on the object of providing to~~
provide a radiation-emitting semiconductor component ~~of the type described in the~~
~~introduction~~ having an improved mirror layer and to thereby increase ~~of increasing~~ the
efficiency and performance of ~~these components~~ the component.

On page 3, delete the paragraph beginning on line 23 through line 26 in its entirety
and insert the following:

This and other objects are attained in accordance with one aspect of the present
invention directed to a radiation-emitting semiconductor component, having a layer
structure which includes at least one photon-emitting active zone arranged between a
cladding layer that is n-conductively doped and a cladding layer that is p-conductively
doped. An n-type contact is connected to the cladding layer that is n-conductively
doped, and a mirror layer is arranged on the side, facing away from the active zone, of
the cladding layer that is p-conductively doped. The mirror layer is formed by an alloy of
silver with one or more metals selected from the group consisting of Ru, Os, Ir, Cu, Ti,
Ta and Cr.

On page 3, amend the paragraph beginning on line 28 as follows:

According to an embodiment of the invention, in a radiation-emitting semiconductor component of the generic type, the mirror layer is formed by an alloy of silver with one or more metals selected from the group consisting of Ru, Rh, Pd, Au, Os, Ir, Pt, Cu, Ti, Ta and Cr. The addition of these metals makes it possible to significantly improve the mechanical properties of silver layers without reducing the reflectivity of the layer compared to pure silver. At the same time, the diffusion of silver into the adjoining semiconductor layer is reduced.

On page 3, amend the paragraph beginning on line 39 through page 4, line 8 as follows:

In one ~~preferred~~ configuration of the radiation-emitting semiconductor component according to an aspect of the invention, the mirror layer is formed by an alloy of silver with one or more metals selected from the group consisting of Ru, Rh, Pd, Au, Os, Ir, Pt and one or more metals selected from the group consisting of Cu, Ti, Ta, Cr. Ternary alloys of this nature have both a high reflectivity in the desired short-wave spectral region and a sufficient mechanical stability.

On page 4, amend the paragraphs beginning on lines 10, 15 and 21 as follows:

~~It is considered particularly preferable for the~~ The mirror layer ~~to~~ can be formed by an Ag-Pt-Cu alloy. This alloy combines a high reflectivity in the blue spectral region with a high mechanical and thermal stability.

~~It is advantageously provided in this context that the~~ The alloy of the silver layer,

in addition to silver, ~~comprises~~ can comprise a total of 0.1% by weight to 15% by weight, preferably 1% by weight to 5% by weight, of the abovementioned metals.

In a ~~preferred~~ one refinement of the radiation-emitting semiconductor component ~~according to the invention~~, it is provided that the alloy of the mirror layer, in addition to silver, comprises 0.5 to 5% by weight of one or more metals selected from the group consisting of Ru, Rh, Pd, Au, Os, Ir, Pt and 0.5 to 5% by weight of one or more metals selected from the group consisting of Cu, Ti, Ta, Cr.

On page 5, amend the paragraph beginning on line 12, as follows:

A thin-film light-emitting diode chip ~~is distinguished in particular by~~ can include the following ~~characteristic~~ features:

On page 6, delete the paragraphs beginning on lines 27 and 32 in their entirety and insert the following heading:

BRIEF DESCRIPTION OF THE DRAWINGS

On page 7, after line 2, insert the following:

Figure 2 shows a second embodiment of the invention.

On page 7, before line 4, insert the following heading:

DETAILED DESCRIPTION OF THE DRAWINGS

On page 7, amend the paragraph beginning on line 19 as follows:

In the exemplary embodiment, the mirror layer 20 ~~consists of~~ includes an AgPtCu alloy containing silver, and approximately 1.5% by weight of platinum and approximately 1.5% by weight of copper. The alloy can have other ingredients, such as one or more of the metals Ru, Rh, Pd, Au, Os, Ir, Pt, Cu, Ti, Ta and Cr. The ingredients are not limited to metals. For example, the alloy could include a semiconductor material if the physical properties of the alloy, such as mechanical stability, reflectivity or ability to form an ohmic contact are not unacceptably deteriorated by the addition of such a material. This alloy on the one hand forms a good ohmic contact with the ~~p-GaN~~ cladding layer 18 made of, for example, p-GaN. Furthermore, the addition of platinum and copper to silver significantly improves the mechanical properties of the silver layer. The high reflectivity of the mirror layer in the blue spectral region is retained. Furthermore, there is scarcely any diffusion of silver atoms out of the AgPtCu layer 20 into the p-doped cladding layer 18, and as a result a highly reflective, stable p-contact layer is obtained.

On page 7, amend the paragraph beginning on line 39 as follows:

Alternatively, the mirror layer may include ~~consist of~~ an AgPtRhCu alloy, an AgPtCuTi alloy or an AgPtRhCuTi alloy or another of the advantageous alloys mentioned above ~~listed in the general part of the description.~~

On page 8, insert the following before the paragraph beginning on line 5:

Fig. 2 shows the same diagrammatic sectional illustration of an InGaN luminescence diode as depicted in Fig. 1. However, Fig. 2 also shows a p-doped layer

19 between the p-doped cladding layer 18 and the mirror layer 20.

On page 8, delete the paragraph beginning on line 5 in its entirety and insert the following paragraph:

The scope of protection of the invention is not limited to the examples given hereinabove. The invention is embodied in each novel characteristic and each combination of characteristics, which includes every combination of any features which are stated in the claims, even if this combination of features is not explicitly stated in the claims.